

REMARKS

Claims 2, 7-11, and 26-33 are pending herein.

1. Claims 2, 7-11, and 26-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (2001/0006042) in view of Vaidya (US 5076203). This rejection is respectfully traversed for the following reasons.

A. Claims 2 and 7-11

Claim 2 is drawn to an IBAD apparatus for cooling and positioning a substrate during a continuous high-throughput coating deposition processes. The apparatus includes a transport system for translating a substrate along a first direction and a substrate block having both internal liquid coolant channels and internal gaseous coolant delivery channels. The gaseous coolant delivery channels are hollow along the entirety of their length. Additionally, the internal gaseous coolant delivery channels extend to respective openings at the first surface of the substrate block. The openings are equally spaced apart with respect to each other along a second direction. The second direction is perpendicular to the first direction along with the substrate is translated. That is, the openings are equally spaced in a direction perpendicular to the path of the substrate.

The USPTO relies upon Iijima to teach aspects of claim 2. Specifically, Iijima teaches an IBAD apparatus including a transport system and a substrate block. However, as acknowledged by the USPTO, Iijima fails to teach that the substrate block includes internal gaseous coolant delivery channels.

As such, the USPTO relies upon Vaidya to allegedly teach internal gaseous coolant delivery channels. Vaidya discloses a substrate block having gas channels supplying a porous block with a gaseous coolant. The gaseous coolant flows through the porous block to the surface along which a substrate is translated. Vaidya fails to disclose or remotely suggest gas channels extending to openings equally spaced apart with respect to each other along a second direction i.e., the direction perpendicular to the translation. Referring to present Figs. 1, 5, and 6 of Vaidya, the substrate translates along the curve of the substrate block, corresponding to translating from right to left in Figs. 7-10 Vaidya. While the gas channels 44 in Fig. 7 of Vaidya

and gas channels 63 in Fig. 9 of Vaidya are spaced apart in the direction of translation, there is no suggestion of an additional row channels spaced apart, let alone equally spaced apart, along the second direction (i.e., in the direction perpendicular to the page). While the porous substrate may include multiple flow paths extending to the surface, porous materials generally have a random nature. While the number of pores in a given area can be consistent across the porous block, the spacing between adjacent pairs of pores is generally nonuniform. As such, Iijima and Vaidya, alone or in combination, fail to disclose internal gaseous coolant delivery channels extending to openings equally spaced apart with respect to each other along a second direction perpendicular to the first direction.

Applicants respectfully submit that the USPTO has not provided a proper factual finding that Iijima and Vaidya, individually or in combination, teach, suggest, or provide motivation to achieve the claimed apparatus including internal gaseous coolant delivery channels extending to openings at positions spaced apart from each other at the first surface of the substrate block, the openings equally spaced apart with respect to each other along a second direction perpendicular to the first direction. As such, the USPTO has failed to establish a prima facie case of obviousness with respect to claim 2. Claims 7-11 depend directly or indirectly from claim 2 and are allowable for at least the same reasons as claim 2. Therefore, Applicants respectfully request withdrawal of the 103(a) rejection over Iijima and Vaidya.

B. Claims 26-32

Claim 26 is drawn to an IBAD apparatus for cooling and positioning a substrate during a continuous high-throughput coating deposition processes. The apparatus includes a transport system for translating a substrate along a first direction and a substrate block having both internal liquid coolant channels and internal gaseous coolant delivery channels. The surface of the substrate block includes an array of orifices, the orifices being spaced apart from each other along the first direction and a second direction perpendicular to the first direction. The orifices are equally spaced apart from each other along the second direction. The gaseous coolant delivery channels extend to the array of orifices and are hollow along the entirety of their length.

As discussed above, Iijima fails to teach that the substrate block includes internal gaseous coolant delivery channels. Additionally, Iijima fails to teach an array of orifices along the

surface of the substrate block. It appears to be the USPTO's position that openings of the porous material constitute orifices. However, as the interconnecting channels of the porous material would be randomly distributed, Vaidya fails to teach or suggest that the orifices are equally spaced apart from each other along the second direction, as discussed above. While in Fig. 2 Vaidya does disclose an injection nozzle including gas outlets arranged perpendicular to the translation path, the injection nozzle is separate from the porous substrate block. Further, Vaidya's suggested combination of the injection nozzle and the porous substrate block is to simultaneously use the porous substrate block and the injection nozzle. Still, neither the porous substrate block nor the injection nozzle includes an arrangement of openings equally spaced in two dimensions, as claimed. As such, Iijima and Vaidya, alone or in combination, fail to teach an array of orifices, the orifices being equally spaced apart from each other along the second direction. As such, the USPTO has failed to establish a prima facie case of obviousness with respect to claim 26. Claims 27-32 depend directly or indirectly from claim 26 and are allowable for at least the same reasons as claim 26. Therefore, Applicants respectfully request withdrawal of the 103(a) rejection over Iijima and Vaidya.

2. Applicants would like to specifically point out newly added claim 33. Claim 33 requires the internal gaseous coolant delivery channels have a length extending from the manifold to the respective openings and are straight and hollow along the entirety of the length. Inserting porous material into a gaseous coolant delivery channel prevents the channel from being hollow along the entirety of the length. Alternatively, if it is the USPTO's position that the flow path through the porous material is a gas channel, due to the random nature of the interconnected porosity within the porous material, the gas generally follows a flow path that is not straight along the entire length.

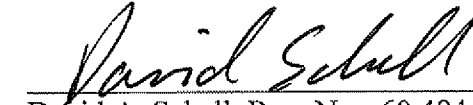
Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicants' undersigned representative at the number listed below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

Date 1/2/09



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